

Requested Patent GB275902A

Title: IMPROVEMENTS IN ARTIFICIAL FEET ;

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ABSTRACT:

PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in Artificial Feet.

I, ADOLF KALETTA, of Hersterbachstrasse 6, Köln-Klettenberg, Germany, of German nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to an artificial foot provided with a compressed air cushion and a rubber portion constituting the foot proper.

It has previously been suggested to provide an artificial foot comprising a hollow metal shell, which is filled with an inflatable rubber bag, and to fit over the front of said shell a detachable slipper or gosh made of rubber which together with the shell corresponds substantially to the shape of the natural foot; or comprising a shell having a bottom bridge-piece within the shell, the concave sole so formed receiving an inflatable pneumatic bag. In both constructions the uprights of the artificial lower leg are connected to the exterior and sides of the shell.

These constructions while being suitable for absorbing shocks produced by placing the foot on the ground do not adequately meet conditions relative to the rolling action of the foot, transference of the pressure due to the load on the foot, and uniformity of support given to the foot during movements thereof.

The object of the present invention is to provide an improved construction of artificial foot having its parts so proportioned and associated that the proper effect may be attained, more particularly having regard to the conditions above stated.

According to the invention the artificial foot comprises a solid rubber portion corresponding substantially to the shape of the natural foot approximately up to the region of the ankle, the shaft of the leg being embedded or incorporated in

said solid rubber portion, and a separate shallow hollow sole in the form of a compressed air cushion extending beneath and secured to the sole of the rubber portion. The walls of the sole-shaped compressed air cushion are preferably reinforced along the longitudinal edges thereof by a soft rubber mass for the purpose of providing elastic compressible supporting edges.

In the accompanying drawing, which illustrates one form of artificial foot according to the invention.

Figure 1 is a longitudinal section and Figure 2 is a cross section on the line II—II Figure 1.

The body of the artificial foot corresponds in shape and size to that of the natural foot of the wearer so that it can be fitted with a boot symmetrically similar to that of the natural foot. The shaft 1 for connecting the body of the foot to the usual carrying bars of the prosthesis of the lower leg is advantageously made of wood or other suitable rigid material. The lower part of this shaft is from a point indicated by the ledge 2 in the region of the ankle embedded in the foot proper consisting of rubber. The upper and lateral surfaces of the rubber portion 3 are plastically formed corresponding to the natural shape of the foot or to the inside of a boot, preferably a lace-up boot, designed for such a foot. The height of the rubber portion, especially at the forward part of the foot is so determined however, that the pointed part of this rubber portion 3 adapts itself under the weight of the body of the wearer, although not to a greater degree than the pointed part of the boot occupied by the natural foot.

In order to effect constant transference of the supporting pressure of the rubber portion during the rolling movement of the foot the rigid shaft 1 is provided near to its lower surface with a gradually

broadening portion 4, which extends in the manner of a supporting rib into the rubber mass.

The under part of the foot is constituted by a hollow member 5, which is manufactured independently, and is secured as required to the bent lower surface of the rubber portion by means of rubber cement or other uniting agent facilitating when required detachment.

Whilst the middle parts 6, 7 of the two flat halves of the sole-shaped hollow member are made proportionately thinner, the walls are made broader at the edges as indicated at 8, so that a considerable portion of the pressure exerted by the sole can be transferred to the rubber portion 3. The internal space of the hollow member is filled with compressed air at a suitable pressure through the valve 9 arranged in the arched region of said member.

Since, as already stated, a more or less greater portion of the pressure exerted by the sole is transferred directly by the edges to the rubber portion 3, air at a correspondingly lower pressure is sufficient for use in the hollow member, in consequence of which an adequate cushioning or damping effect can be obtained. The reinforced carrying edges 3 of the sole-shaped member moreover produce the advantageous effect that no shock is experienced due to lateral movement of the artificial foot on even or uneven ground, thereby ensuring complete transference of the pressure due to the sole to the body of the foot; whereas in artificial feet as hitherto constructed,

even if they were provided with air cushions bulging out the bodies of the feet, there was absent adequate lateral adaptability such as is the case with natural feet.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An artificial foot comprising a solid rubber portion corresponding substantially to the shape of the natural foot approximately up to the region of the ankle, the shaft of the leg being embedded or incorporated in said rubber portion, and a separate shallow hollow sole in the form of a compressed air cushion extending beneath and secured to the sole of the rubber portion.

2. An artificial foot according to Claim 1 wherein the walls of the sole-shaped compressed air cushion are reinforced along the longitudinal edges of the sole by a soft rubber mass for the purpose of providing elastic compressible supporting edges.

3. An artificial foot according to Claim 1 or 2 wherein the compressed air cushion is detachably secured to the sole of the solid rubber portion by means of rubber cement or other uniting agent.

Dated this 26th day of April, 1927.

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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1

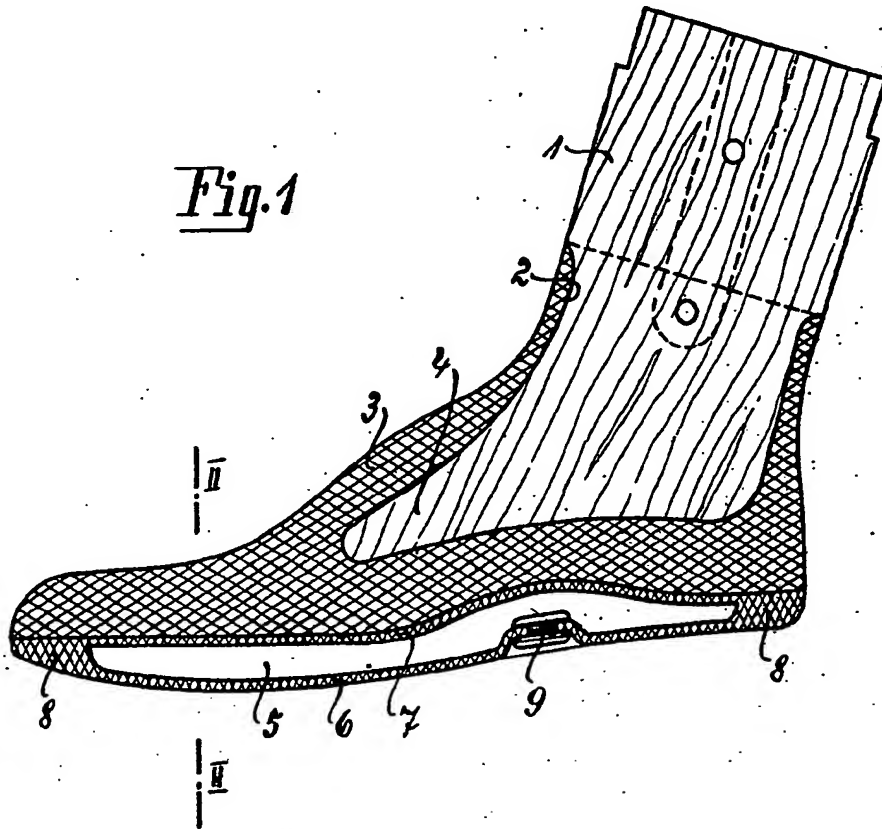


Fig. 2

